

Landowner Willingness to Engage in Long-Term Timber Leases in West Virginia, USA

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Abstract As global competition increases for wood-based products, the need for more efficient supply chains becomes increasingly important. In the forest products sector, these supply chains involve individuals and firms ranging from private forestland owners with standing timber to factories producing final finished products. Long-term timber leases are one mechanism that can be used to develop access to timber supplies for companies unable or unwilling to purchase land outright for growing timber. To investigate private forest owner opinions and attitudes regarding long-term timber leases, we conducted a survey of landowners from Wetzel county, West Virginia. No long-term leases were reported by respondents, but 24% claimed they would enter a lease under certain conditions. The most frequently listed concern related to long-term timber leases was for the “loss of control”. Results of this survey are discussed in the light of forest management efforts that might be used to improve the social, financial, and environmental benefits for private forest owners.

Keywords Private forest owners · Wood supply chain · Transparency · Cooperative forest management

Introduction

With rising global demand for wood-based products, the need for more efficient wood supply chains becomes increasingly important. In the forest products sector, supply chains in the eastern US involve individuals and firms made up of private

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forestland owners with standing timber, sawmills, and factories producing final finished products. Efficient access to and mobilization of timber resources is critical for assuring sustainable wood supply and long-term vitality of the forest products sector (De Galember 2003). Needed efficiency improvements in this segment of wood-supply chains are exemplified in the case of paper supply chains in the southern USA, where the upstream end of the supply chain (including cost of standing timber, logging, and log transport) constitutes the largest direct cost for manufacturing paper products (Siry et al. 2006).

Wherever there is a wood-using mill, wood supply is a fundamental concern. This is particularly true in areas where most of the land is in small-scale, private landholdings and where forest product companies rely on external sources of wood for their mills. These conditions are present in the eastern USA, where wood-using industries are divesting themselves of forest landholdings in favor of purchasing timber on the open market (Hagan et al. 2005). This divestiture process continues even as rural forested areas are becoming increasingly urbanized (Egan and Luloff 2000). Furthermore, as in many European nations (Kvarda 2004; Wild-Eck 2005), landowners likely do not have timber production as a primary ownership objective (Egan and Luloff 2000; Little 2006), and the demand for eastern hardwoods is changing in light of increasing global competition (Alig et al. 2002; Franklin and Johnson 2004; Grushecky et al 2006; Brindley 2008).

In 2005, a collaborative project was initiated to evaluate methods for increasing the efficiency and sustainability of hardwood supply chains in Virginia and West Virginia (Bond et al. 2005). During project discussions about supply chain transparency, where each firm or member of the supply chain has knowledge of product availability and demand of the other members, the issue of landowner fidelity to the supply chain arose. That is, what are the benefits that accrue to the forestland owner—the raw material producer—by committing their land to a particular firm or supply chain, and what forms might that commitment take?

In a wood supply chain, private forestland owners are less apt to engage in business relationships than downstream participants such as sawmills, kiln drying facilities, and component and other secondary manufacturers. Landowners might sell timber only once in a lifetime depending on the size of their landholdings, size and quantity of timber species, and site productivity. Hence, the opportunity to be integrated with a particular wood supply chain by establishing relationships with downstream agents is limited.

During the 1900s, long-term timber contracts were common in southeastern USA. In a survey of southern forest products companies conducted in the late 1960s, 54 wood-based companies held 2.7 million hectares of land under long-term lease agreements (Siegel 1973). Timber leases were viewed as a cost-efficient way to maintain a secure wood supply without outright ownership (Greene 1979). During this same period, landowner assistance programs, also known as cooperative forest management (CFM) programs, came into being as a way for forest products companies to provide services in exchange for some level of access to their clients' timber (Cleaves and O'Laughlin 1983; Cabbage and Skinner 1985). In these company-landowner arrangements, the company provides the landowner with technical assistance in exchange for either the first right of refusal to purchase the

landowner's timber or at least the opportunity to purchase the timber when it is advertised for bids.

Reports of long-term timber leases diminished in the 1990s as the traditional, vertically integrated forest industry went into a period of consolidation where smaller companies were acquired and larger companies merged (Diamond et al. 1999). More importantly, large-scale sell-offs of forestland by wood-based manufacturers were frequently accompanied by long-term supply contracts with the purchaser (Yin and Izlar 2001). Today, with the departure of vertically integrated forest products companies and the dependence of wood-based primary and secondary manufacturers on the open wood supply market—dominated in the eastern US by small-scale private landowners and large-scale timber investment organizations (Brown 2001)—few long-term leases exist and if they do they will not likely be renewed (Personal communication 01/2008: Bob Izlar, Director—Center for Forest Business, University of Georgia).

It is generally common knowledge that few leases, if any, have ever existed for hardwood timber in West Virginia and this is substantiated to some degree by Zinn and Miller (1984) who interviewed foresters about the potential use of the increment contract—a type of long-term timber contract—in West Virginia. However, in light of today's globalized markets there is an increasing realization that some form of partnership between forest products manufacturers and timber owners might provide win-win situations (Mayers 2000; De Galembert 2003). These company–community partnerships, including those with private forestland owners, might have most potential in regions where wood demand is strong but access to timber is limited due to parcelized landscapes, a large percentage of absentee landowners, fewer loggers, or typically low or volatile prices.

In order to assess contemporary landowner attitudes regarding the feasibility and practicality of long-term timber agreements between forest products companies, foresters, and landowners in the state, a survey was conducted in a single rural county in northern West Virginia. This report summarizes the findings of that survey.

Methods

Survey Questionnaire and Population

A questionnaire was developed to elicit perceptions, concerns, and attitudes of private landowners concerning long-term timber leases. The questionnaire contained 44 questions, 11 on timber harvesting history, 3 on land tenure, 19 on timber leases, 4 on education and information, and 7 on demographics. In the questionnaire, a simple definition of an example timber lease agreement was provided as follows:

“Generally, long-term timber leases feature two main parts:

- (1) an agreed-upon annual or single up-front fee paid by a purchasing party to retain the right to harvest an agreed-upon amount of timber in a specified time period (generally 5–20 years), and
- (2) an agreed-upon price for timber harvested during the lease period.

The timing and harvesting guidelines for long-term leases can vary considerably and are set in place by the contract between the landowner and timber leasing party.”

A table listing 15 issues related to potential benefits and concerns of timber leases was developed by the authors and presented in the questionnaire. Participants were asked to indicate the level of importance for each benefit or concern by checking either very important, important, somewhat important, or not important.

The reference population consisted of 885 taxpayers owning more than 20.2 ha in Wetzel County, West Virginia who were filtered from a database purchased from the West Virginia Tax Office in spring 2005. This minimum acreage was selected to pare down the original list of 14,888 property owners in Wetzel County and to increase the likelihood that they had adequate area to conduct at least one commercial timber harvest. McGill et al. (2004) surveyed landowners throughout West Virginia who had sold timber between 2001–2002 and found respondents’ median timber harvesting area to be 16 ha. This finding, combined with our desire to be in conformance with the major descriptive category breakpoint of 20.2 ha for the USA nationwide forestland owner surveys (Birch and Kingsley 1978, Birch 1996a, b), led us to choose 20.2 ha as the lower cutoff for selecting properties to sample.

Wetzel County in north-western West Virginia was selected as the study county for two reasons: the heavy forest cover of the county and our desire to avoid survey fatigue (Porter et al. 2004). Wetzel County is about 250 km from counties of interest for an upcoming landowner study and has not been used for any recent forestry-related surveys within the past 2 years.

As in most counties in West Virginia, forestry plays an important role in Wetzel County. Forestland covers 82% of the county’s 93,037 ha surface area (Griffin and Widmann 2003). The county has two log concentration yards, three hardwood sawmills, and a dry kiln operation with combined annual production capacity of 5.25 million board feet of lumber (WVDOF 2008). These mills are important to the local economy, but it is important to consider that even low-grade pulpwood is transported well beyond the boundaries of most West Virginia counties (Grushecky et al. 2007). As such, many other mills in the region can easily access timber grown in Wetzel County.

Questionnaires were mailed in envelopes containing a cover letter requesting the assistance of the landowners and a coded, pre-addressed, and stamped return envelope. A request was made to return blank questionnaires if not interested or unable to fill out a response. The mailing schedule followed the four-step procedure recommended by Dillman (2000); the steps were: 19 February 2007, pre-questionnaire postcard; 6 March and 9 March 2007, first mailing of questionnaire; 21 March 2007, reminder postcard; and 9 April, second mailing of questionnaire.

By April 20, 2007, we received 177 completed or partially completed questionnaires from the original 885 questionnaires sent to Wetzel county landowners. Accounting for the 167 returns due to bad or incomplete addresses, 5 deceased, 1 duplicate, 2 refusals, and 92 implicit refusals (returned blank questionnaires) the overall response rate was 20% (equation RR6 in AAPOR 2006). The large number of bad or incomplete addresses was likely due to the

slightly aged (3-year-old) mailing list. The cooperation rate, calculated as completed questionnaires/(completed + implicit refusals), was 67% (AAPOR 2006), that is, two out of three landowners who received the questionnaires and sent them back, sent them back with responses to our questions.

Numerical Methods

Logistic regression was used to investigate relationships between respondents' attitudes and demographic characteristics and their willingness to participate in long-term timber contracts. Univariate regressions were carried out using PROC LOGISTIC in SAS (Allison 1999). A logit model was used with the bivariate response variable "willingness to engage in a long-term lease" that was written into the questionnaire as "Would you be willing to enter into a long-term contract with a company that would pay you an annual lease fee for a set period of time (say 10 years) plus the average fair market value for timber when it is harvested?" The significance level used in this variable screening process was set at $\alpha = 0.05$.

Results

Demographics

Respondents were residents of eight different states, although West Virginia residents made up 84% of the group. Ohio, Pennsylvania, and Maryland residents accounted for about 4% each. California, Florida, Michigan, and North Carolina made up about 1% each. Males made up 85% of the respondents and averaged 63 years old (range 37–105 years); females averaged 66 years old (range 47–87). Fifty-five percent of the respondents were retired. Average forest area owned was 55.4 ha.

Respondents' History of Timber Harvesting

Survey responses indicated that timber harvesting pressure had been widespread in the county, with 94% of the respondents having been contacted by individuals wanting to purchase their timber. Of the 116 landowners who had harvested timber, only 35 (30%) indicated they had engaged a forester. Twenty-one respondents hired private consultants, six hired WV Division of Forestry Service Foresters, and six hired industry foresters; two did not indicate the type of forester. Apart from forester involvement, three quarters of timber sales (76%) were completed by the respondent and a buyer and 18% had another family member involved; only 3% of the timber sales had a lawyer associated with the transaction.

Forester-assisted sales were predominately lump-sum sales (84%) where a timber prospectus that lists sale volumes and detailed harvesting requirements or restrictions is sent out to prospective timber buyers; buyers then submit closed bids that are opened and read on a predetermined date. On sales without foresters

present, lump-sum sales accounted for 38% of the sales, 21% were pay-as-cut sales, and 32% were percentage sales, where the landowner and timber harvester would share the proceeds on an agreed basis.

Long-Term Timber Leases—Attitudes and Issues

Only one respondent claimed to have a long-term timber lease. Their returned questionnaire was accompanied by a note explaining that the timber rights were held by the previous landowner, who retained the rights to cut timber following sale of the property. Retention of timber rights is uncommon in West Virginia, although surface and mineral rights frequently have separate owners.

Responding to the question ‘Would you be willing to enter into a long-term contract with a company that would pay you an annual lease fee for a set period of time (say 10 years) plus the average fair market value for timber when it is harvested?’, 66% answered no, 24% answered yes, and 10% were undecided. When asked ‘Would you be interested in finding out more about long-term timber leases?’ 57% said they would not, 42% were interested, and 1% said ‘maybe’. A higher proportion (97%) of those willing to enter a lease wanted more information than those not willing to enter a lease (14%; $\chi^2 = 66.75$, $P < 0.001$).

The follow-up question to whether survey participants would be interested in entering into a long-term timber lease was open-ended, inquiring as to the greatest concern they had about entering into a lease agreement. Many respondents listed multiple concerns within a single response. Each concern was labeled as one of 11 a posteriori generated categories and evaluated as independent responses, adding equal additional increases to the total number of concerns.

The largest group of respondents (20%) wrote in concerns related to “loss of control” (Table 1). These responses ranged from direct mention of control issues, “I would not want someone having control over my property” to indirect mention of this “if and when I sell my timber I want to be able to decide what, when, and where and to whom I sell.”

Closely related to the control issues is the concern called “conditions for harvesting” that was listed by 15% of the respondents. Generally, these respondents wanted to make sure they would have specifications on “what amount could be harvested, when to harvest, and conditions after harvest.”

The percentage of respondents (14%) listing “damage” as a major concern was nearly equivalent to those listing concerns related to conditions for harvesting. In this category, respondents wrote they were attentive to “how much is destroyed while harvesting and improvement cutting,” “damage to the property from logging equipment and the erosion associated with the logging equipment usage,” and “destruction of natural beauty.”

Fair timber prices and being cheated accounted for 23% of the reasons respondents were concerned with long-term leases. The less frequently mentioned reasons listed combined to 27%. These responses were from landowners who were either not interested, were opposed to the idea, or had lifestyles (including senior ages) with much higher priorities for the undisturbed use of their properties. For

Table 1 Respondents' reasons for concern related to long-term timber leases. Categories were developed from opened-ended question asking for their primary concern

Reasons	Percentage
Loss of control	20.5
Conditions for harvesting	15.2
Damage	14.4
Price	12.1
Being cheated	10.6
Would not give lease	9.8
Life stage	9.8
Need more info	6.8
No concerns	0.8

example, one respondent stated "I am 80 so decision made would affect my children's choices."

Importance rankings of issues related to long-term timber leases are shown in Figure 1. Concern for soil erosion and water quality ranks highest in average importance values. Receiving maximum income from timber ranks second in importance. Surprisingly, the advantages normally attributed to long-term leases—up-front payments, annual income, and reducing risk of timber price fluctuations—were considered the least important among the 15 issues.

Five of the 20 univariate logistic regression models that were generated to investigate the relationship between landowner attributes and perceptions of leases (Table 2) were found to be statistically significant. These statistically important variables included control over trees harvested, up-front income, concern over multiple harvests, provision for early termination of the lease, and ability to obtain green certification. Each of these significant variables had an odds ratio less than one, suggesting that these variables were less important to those willing to enter a lease than those not willing to enter a lease. For example, 89% of the respondents not willing to enter a lease agreement claimed that it was either very important or important to have a provision for early termination of the lease, whereas only 70% of those willing to enter a lease recorded the same concern.

Discussion

Not surprisingly, landowners in Wetzel County are not engaged in long-term timber agreements with forest products companies. This is very likely to be the case across the rest of West Virginia. Apart from a single respondent who owned property that had timber rights owned by another party, no other long-term timber harvesting agreement was found.

Wetzel county landowners ranked financial aspects of long-term timber leases lower than most other environmental and social factors. Of the 15 factors, the three most closely associated with benefits that might accrue from a long-term timber lease—risk of price fluctuations, annual income, and upfront income—ranked 13,

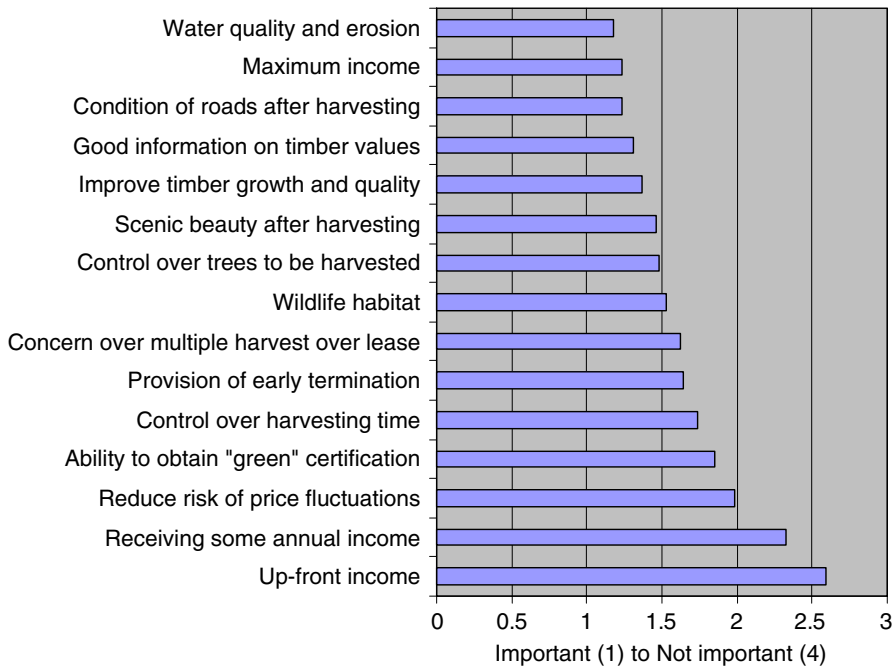


Fig. 1 Mean ratings for factors of importance related to long-term timber leases

14, and 15, respectively (Fig. 1). Even though maximum income ranked second just behind the top factor “water quality and erosion,” it can be argued that this factor is not necessarily one exclusively associated with timber leases. Maximum income for timber sales is commonly thought to be achieved through a closed-bid process.

That landowners are unfamiliar with timber leasing agreements does not mean they are unwilling to consider long-term timber supply relationships. A large proportion (42%) of respondents in this study indicated that they would be interested in finding out more about timber leases, and nearly a quarter (24%) said they would be willing to enter into a 10-year lease that includes an annual lease fee plus fair market value for timber when it is harvested. With 11% claiming that securing the fair market value for a lease was their biggest concern, overcoming this apprehension might not be a great challenge for a forest products company that wants to develop a wood supply that has guaranteed access and mobilization efficiencies.

At this point, it is not possible to tell how many landowners would gravitate toward long-term timber leases with local wood-using companies if these financial instruments were available. Given the level of interest for more information regarding lease agreements, concrete examples of timber leases with definable financial and supply arrangements between companies and landowners might encourage landowners to commit some or all of their timberlands to the wood supply of a forest-products firm or forestland owner cooperative.

Table 2 Results of univariate logistic regression modeling relating independent variables to the dependent variable “Willingness to enter a long-term timber lease.” Response variable was bivariate (willing versus not willing)

Independent variable ^a	OR	95% CI	$P > \chi^2$
IV: Good information on timber values	3.35	(0.40–28.3)	0.268
IV: Conditions of roads	0.14	(0.01–1.38)	0.091
IV: Scenic beauty	0.89	(0.15–5.10)	0.895
IV: Wildlife habitat	0.53	(0.13–2.10)	0.365
IV: Water quality	*	*	*
IV: Control over harvest timing	0.45	(0.17–1.17)	0.104
IV: Control over trees harvested	0.27	(0.08–0.93)	0.038
IV: Annual income	0.66	(0.29–1.52)	0.329
IV: Up-front income	0.39	(0.17–0.88)	0.024
IV: Maximum income	1.36	(0.14–13.5)	0.795
IV: Risk reduction in timber prices	0.86	(0.34–2.18)	0.754
IV: Improving growth of timber	0.89	(0.08–10.2)	0.927
IV: Concern over multiple harvests	0.18	(0.06–0.54)	0.002
IV: Provision for early termination of lease	0.17	(0.05–0.54)	0.003
IV: Ability to obtain green certification	0.20	(0.06–0.64)	0.007
Have harvested timber in past	1.92	(0.85–4.38)	0.119
Hectares owned (<40.5, \geq 40.5)	0.84	(0.37–1.90)	0.666
Gender (male, female)	1.09	(0.35–3.37)	0.884
Education (high school, college)	0.55	(0.24–1.27)	0.160
Income (<\$60,000, \geq \$60,000)	0.87	(0.36–2.08)	0.751

^a Independent variables are all bivariate. Importance values (IV) relating to questions concerning long-term timber leases were rescaled (1 = very important + important, 2 = somewhat important + not important). Other variables show levels in parentheses. Median land area owned was 40.5 ha

*Logistic regression using the importance values for water yielded a questionable model fit as there were zero responses in the data that claimed water quality was somewhat or not important with respect to long-term timber lease concerns

Note: An intercept statistic was present in each model, but not shown. Odds ratios (OR) are shown with their respective 95% confidence intervals (CI). $P > \chi^2$ is the probability level for the overall type III analysis of effects for the slope (β) term based on the Wald χ^2 test statistic

Respondents’ wariness to enter long-term timber agreements is related to a sense that they might lose control over their property or finances. Many reasons given by landowners for concern with long-term lease arrangements were interrelated. For example, the loss of control can mean different things to different landowners; loss of control might mean dissatisfaction of a company coming onto their property with little advance notice or the feeling that their financial stake in the agreement is less than it should be. These sentiments regarding private forest property are likely similar to those of landowners in other regions (Jones et al. 1995; Egan 1998) and other countries (e.g., Kvarda 2004; Wild-Eck 2005).

Some West Virginia landowners are familiar with industry assistance in the form of cooperative forest management (CFM) groups. These programs might be the

most common long-term agreement currently available to landowners in West Virginia. Agreements made under industry-sponsored CFM programs in West Virginia are not legally binding agreements, but rather are programs where management planning and timber sale administration services are offered with the agreement that the company has an opportunity to bid on the timber if the landowner should decide to sell timber.

While the establishment of forest cooperatives has not taken root to the same degree in the US as in many European nations (Kittredge 2005), some form of cooperative relationships among landowners, consulting foresters, and forest industries can likely lead to increased benefits for all participants (De Galember 2003). Cooperative relationships might take various forms, from strict leasing programs by forest products companies to programs similar to the Farm Partnership Scheme coordinated by Coillte in Ireland that includes an advanced payment, plantation establishment grants, and revenue sharing, all while the landowner maintains property ownership (Dhubhain and Kavanagh 2003).

Forestry consulting firms that are beginning to offer carbon offset credit aggregation services, in which forestland properties are organized into efficient systems to inventory, monitor, and report carbon sequestration credits to financial markets (Reedy 2003), might use a similar aggregation model for developing accessible supplies of timber resources for local or regional manufacturers. Especially in today's world and local economies when stories from the field disparage timber prices, working in partnerships may become more of an attractive endeavor to help add value to various components of the wood supply chain, or to create more local components of a supply chain (e.g., small-scale mills, co-owned moulding machines).

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